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ABSTRACT

This report describes the development of a computer simulation intended to aid the South Dakota State Legislature in reforming the state school finance system. The report briefly describes the rationale for the simulation, the process by which it was developed, the policy assumptions on which it is based, and its major strengths and weaknesses. Appendix I presents the standard questions and alternative responses used to run the simulation, and appendix II presents a sample of the simulation's output. (JG)

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PROPOSED STATE AID FORMULA FORSOUTH DAKOTA

(842 Assisted)

U. S. DEPARTMENT OF HEALTH,
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SCHOOL FINANCE EQUALIZATION STUDY WORKSHOP

Denver, Colorado

March 3 and 4, 1977

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PROPOSED STATE AID FORMULA FOR SOUTH DAKOTA

For many years, South Dakota Governors and Legislators have been concerned with both the way dollars to support elementary and secondary education are collected and the way they are shared by the school districts which must provide education to the children of South Dakota. In 1975, the legislature made a detailed study of school finance, but was unable to reach a compromise on a new program during the session. Because of continued concern over school finance, the legislature, through its executive board, asked the State Board of Education to continue to study ways to finance schools which would provide a more "general and uniform system of public schools" as stated in the Constitution.

Pressure for education finance reform has continued to grow. At present, a suit is being brought against the State by the South Dakota Education Association, the School Administrators of South Dakota, and the Farmers Union on behalf of a certain group of students who, it is alleged, have not received equal educational opportunity because of the state system of financial aid to elementary and secondary education. The State Education Agency, of course, finds itself on the receiving end of such a law suit.

The State Board of Education selected a Task Force to study education finance in South Dakota. As the Task Force began a series of meetings, litigation was only an ugly rumor. Now it is approaching reality. While the work of the Task Force has failed to prevent initiation of legal action, legislation has been introduced that would modify the current system of education finance. Presumably, this modification would satisfy the constitutional requirement of equal educational opportunity. One of these bills, House Bill 868, is a direct outgrowth of the Education Task Force meetings and the work done by the Education Commission of the States.

The Education Commission of the States was selected by the Task Force on Education Finance to provide technical assistance in the search for a more equitable distribution of funds. Reasons for this selection included the previous work ECS had done for the state and the knowledge ECS personnel had of the education finance system of the state and the political climate of the state.

Initially, ECS presented to the Task Force preliminary simulations with various funding levels. One set of simulations held state aid harmless (kept state aid per pupil at least at last year's level); another set did not hold state aid harmless. Considerable discussion occurred concerning which set of simulations should be considered further and should be the basis for proposed legislation. Even though the more equitable financial aid system would have decreased state aid per pupil to some districts because of district wealth and tax effort, political realities swayed the decision. The Task Force decided to study further the hold harmless simulations. Simulations that showed decreased state aid allocations to some districts would be disregarded because of the clamor sure to be raised by those districts.

Another decision, based at least partially on politics, was to change the education finance system from its present classroom unit basis to a per pupil basis. The rationale for this was that the proposed financial system could be explained easier in terms of pupils than the more ambiguous classroom unit. There are, however, complicating features of the per pupil education aid system. Not all pupils are alike and the differences between pupils can result in additional costs to school districts.

Hours were spent deliberating over factors that add to education costs and how much the state should contribute to financing these costs. Factors considered were:

- (1) Additional funds for each first and second grade pupil. (The task force felt that assuring pupils a good start in school is important).
- (2) Additional funds for each ADC (Aid to Dependent Children) pupil.
- (3) Additional funds for each pupil living in a family whose income is below the poverty level.
- (4) Additional funds for each pupil in special education classes.
- (5) Additional funds for each pupil enrolled in small schools, (this was done on a sliding scale basis, the smaller the school, the greater the amount of state aid per pupil). This, of course, caused some discussion, with representatives of the more populous districts being a bit disgruntled over additional funds per pupil being directed toward small schools. They were comforted by the fact, however, that the more populous districts would usually receive additional funds per pupil because of special education classes and the number of pupils below the poverty level.
- (6) Additional funds for each pupil because of sparsity (number of pupils per square mile). This factor is calculated on a sliding scale. The more sparse the district, the more funds allocated per pupil.
- (7) One room schools count as 20 pupils regardless of the number of pupils in the school. (This item drew fire because some felt that very small schools should consolidate; others felt that consolidation could cause a hardship due to resulting increased transportation time and distances.
- (8) Property in school districts is sensitized to the income level of the district. A high income area would receive less state aid than a low income area, all other factors being equal. The weakness of this item is that income figures used are those of the 1970 census, consequently, are getting more and more out of date.

- (9) School districts with declining enrollments would average the enrollment over three years to lessen the impact of reduced state aid.
- (10) No school district would receive less state aid per pupil than it did under the existing system.
- (11) An expenditure cap of 15% over the previous year in school districts expending \$1,100.00 or more per pupil.
- (12) The state would guarantee an income of \$20.00 per pupil enrolled for each mill over the qualifying mill levy.

All these factors, and more, were included in the computer simulation developed by ECS. While the State Board of Education did not recommend all the factors mentioned above, the computer program permits division staff to add, delete, or change percentages applied to certain cost factors, e.g., special education, or sparsity sliding scale. Since the Task Force and State Board of Education made their recommendations concerning the proposed state aid formula, changes have been made. There is a possibility that Item 8, above, may be eliminated and Items 11 and 12 have been changed.

Gaining access to the computer and the required program is relatively simple. A portable computer terminal with an audio coupler and a telephone permit communication with the computer. Using the program amounts to responding to a standard Set of questions each time the program is run. These questions and alternative responses are shown in Appendix I.

Line number 600 asks "Do you want extra cost factors for special ed?". The response can be either y for yes or n for no. If the response is yes, a cost factor is entered. Since only one factor can be entered, there can be no differentiation between the costs of providing special education, e.g., for the deaf, visually handicapped, or multiply handicapped. While this feature is a limitation, it can hardly be criticized by a representative from South Dakota since the Task Force requested only one factor for all special education categories.

Line 700 permits a choice of cost factors for small districts. The intervals, however, have been established in the program and do not allow the operator to change them to 0 - 150 and 151 - 300 for instance. The same situation is true for the cost factors of sparsely populated districts.

The program output follows a standard pattern. (See Appendix II) First, statewide totals and averages are printed. These are followed by: total additional cost of the program; per pupil expenditures of school districts at the 5th, 25th, 50th, 75th and 95th percentiles; impact of the simulated school finance program on the school districts with the ten lowest and ten highest in property wealth; impact of the simulated school finance program by quintiles of weighted adjusted assessed valuation per pupil; impact of the simulated school finance program by size of school district; and several variables for each school district in the state.

It is possible to list only individual districts instead of the entire list of school districts. These will not print out, however, until the general statistics have been printed, thereby requiring additional time to get the desired information. Response time to individual commands, however, has been very good; 20 to 30 seconds on a busy day.

Minor problems have occurred in the communication system, e.g., the state capitol operator in charge of the interstate WATS lines broke the connection in the middle of a run with the explanation that the line had been tied up for an hour and that there were a number of other callers trying to use the lines.

So far, legislators have been interested, primarily, in the impact of various amounts of increased state aid on individual districts. As yet, they have not been asking for changes in pupil weightings. While it's difficult to contemplate all future legislative demands for data, the system has adequately met the needs of the South Dakota SEA to date.

APPENDIX I

LINE NO.	QUESTIONS	POSSIBLE ENTRIES
410	What response model do you want?	1, 2, 3 or 4
420	What flat grant do you want?	\$/pupil
430	(1) Do you want a GTB program?	y or n
440	- \$/mill/pupil or \$/mill/capita?	p or c
450	- What is the GTB?	\$/mill/pupil or capita
460	- What is the GTB for the 1st 8 mills?	\$/mill/pupil
470	(2) Do you want a full state assumption program?	y or n
480	- Expenditure/pupil	\$/pupil
490	- Statewide property tax	mills
500	(3) Do you want a foundation program	y or n
510	- Expenditure guarantee	\$/pupil
520	- Required local effort (non-ag)	mills
530	- Do you want a GTB for add on?	y or n
540	- GTB in \$/mill/pupil or \$/mill/capita?	p or c
550	- GTB	\$/mill/pupil or capita
560	Do you want extra cost factors for grade differences?	y or n
570	- Cost factors for K,1-12	(13 factors)
580	Do you want extra cost factors for comp. ed.?	y or n
590	- Cost factors for ADC, poverty children	(2 factors)
600	Do you want extra cost factors for special ed.?	y or n
610	- Cost factor	(1 factor)
620	Do you want extra cost factors for voc. ed.?	y or n
630	- Agriculture factor	{ }
640	- Business	{ }
650	- Distributive Education	{ }
660	- Health and Education	{ }
670	- Home Economics	{ }
680	- Trade and Industrial Arts	{ }
690	Do you want extra cost factors for small districts?	y or n
700	- Cost factors for districts with 0-100 pupils	.160
	101-200 pupils	.120
	201-300 pupils	.080
	301-400 pupils	.040
	401-500 pupils	.020
710	Do you want extra cost factors for sparsely populated districts?	y or n
720	- Cost factors	
	Less than .5 pupils/square mile	.040
	0.5 to .75 pupils/square mile	.030
	0.76 to 1.0 pupils/square mile	.020
	1.1 to 1.25 pupils/square mile	.010
730	Do you want the property tax base sensitized by income?	y or n
740	Do you want to limit the tax rate?	y or n
750	-maximum non-ag tax rate	mills
760	Do you want to limit expenditure increases?	y or n
770	- Maximum \$ increase for expenditures	130,20
780	Do you want impact aid treated as local revenue?	y or n
790	Do you want to hold harmless State Aid?	y or n
800	Do you want to eliminate the current flat grant?	y or n
810	Do you want to give extra aid for declining enrollment?	y or n
820	do you want to provide property tax relief via the formula?	y or n
830	- What is the minimum tax rollback?	mills
840	- What is the immediate tax rollback?	mills
850	Do you want extra aid for 1-teacher schools?	y or n
860	- One-teacher schools are equivalent to how many pupils?	20
870	Do you want a State Aid cap?	
	- N = no	
	- P = percent of entitlement	
	- C = percent of increase	n, p or c
880	- What percent State Aid cap	%
890		EOF

SCHOOL DISTRICT RESPONSE MODEL

- 1 = Maintain current tax rate
- 2 = Tax rate necessary to maintain current expenditure levels
- 3 = Mean of the above two
- 4 = Option 3 for districts with a tax base less than that guaranteed by the State; option 2 for districts with a tax base greater than that guaranteed by the State

APPENDIX II

SOUTH DAKOTA STATE SCHOOL FINANCE SIMULATION

EDUCATION FINANCE CENTER
RESEARCH AND INFORMATION SERVICES DEPARTMENT
EDUCATION COMMISSION OF THE STATES

DESIGNED AND PROGRAMMED BY ALLAN OTTEN AND JUDY FELLOWS

FOUNDATION PROGRAM	
FOUNDATION EXPENDITURE (4/PUPIL)	829.00
REQUIRED LOCAL NON-AGRICULTURAL TAX EFFORT (MILLS)	27.00
GUARANTEED TAX BASE FOR ADD-ON (4/MILL/PUPIL)	18.80

EXTRA COST FACTORS:

GRADE LEVEL DIFFERENCES	
KINDERGARTEN	0.
GRADE 1	.100
GRADE 2	.100
GRADE 3	0.
GRADE 4	0.
GRADE 5	0.
GRADE 6	0.
GRADE 7	0.
GRADE 8	0.
GRADE 9	0.
GRADE 10	0.
GRADE 11	0.
GRADE 12	0.
SPECIAL EDUCATION	1.000
SMALL SCHOOLS	
0 - 100 PUPILS	.160
101 - 200 PUPILS	.120
201 - 300 PUPILS	.080
301 - 400 PUPILS	.040
401 - 500 PUPILS	.020
SPARSELY POPULATED DISTRICTS	
LESS THAN .5 PUPILS/SQUARE MILE	.040
0.5 TO .75 PUPILS/SQUARE MILE	.030
.75 TO 1.0 PUPILS/SQUARE MILE	.020
1.0 TO 1.25 PUPILS/SQUARE MILE	.010

ONE-ROOM SCHOOLS WILL BE CONSIDERED EQUIVALENT TO 20.0 PUPILS

THE UNIFORM STATEWIDE AVERAGE WILL BE USED TO ADJUST ASSESSED VALUATIONS

THE CURRENT FLAT GRANT WILL BE ELIMINATED

THE AID FOR SCHOOL DISTRICTS WITH DECLINING ENROLLMENTS
WILL BE THE AVERAGE OF THE PRECEDING THREE YEARS

STATE AID INCREASES WILL BE LIMITED TO 11.89 PERCENT OF THE DIFFERENCE
BETWEEN THE SIMULATED ENTITLEMENT AND THE ACTUAL 75-76 STATE AID

STATE EQUALIZATION, FLAT GRANT, AND SPECIAL EDUCATION AID
WILL BE HELD HARMLESS FOR ALL DISTRICTS

SCHOOL DISTRICT RESPONSE MODEL

- 1 = MAINTAIN CURRENT TAX RATE
- 2 = TAX RATE NECESSARY TO MAINTAIN CURRENT EXPENDITURE LEVEL
- 3 = MEAN OF THE ABOVE TWO
- 4 = OPTION 3 FOR DISTRICTS WITH A TAX RATE LESS THAN THAT GUARANTEED BY THE STATE;
OPTION 2 FOR DISTRICTS WITH A TAX RATE GREATER THAN THAT GUARANTEED BY THE STATE

1

II-1

INCREASE IN STATE AID:	1	3996134.31
TAX RELIEF:	-4.67415E-01 %	
AVERAGE EXPENDITURE INCREASE:		28.62
EXPENDITURE INCREASE:	174	
EXPENDITURE DECREASE:	0	
TAX RATE INCREASE:	8	
TAX RATE DECREASE:	0	
STATE AID INCREASE:	172	
STATE AID DECREASE:	0	
AVERAGE TAX ROLLBACK:	1.72651E-01	
TOTAL SPECIAL ED PUPILS:	1756.20	
TOTAL COST OF THIS PROGRAM:		36768605.31

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STATE TOTALS AND AVERAGES
 FOUNDATION PROGRAM WITH STE ADD-ON

SIMULATED STATE AVERAGE EXPENDITURE		INCREASE IN STATE AVERAGE EXPENDITURE		SIMULATED STATE AVERAGE TAX RATE		CHANGE IN STATE AVERAGE TAX RATE	
PER PUPIL	PER ELIGIBLE PUPIL	PER PUPIL	PER ELIGIBLE PUPIL	AG	NON-AG	AG	NON-AG
1132	1062	29	27	22.55	37.11	.09	.17

SIMULATED STATE AID	INCREASE IN STATE AID	NUMBER OF PUPILS	NUMBER OF ELIGIBLE PUPILS
36768605	3996134	151370	161404

THE TOTAL ADDITIONAL COST OF THIS PROGRAM IS : \$ 3996134

FOR THIS PROGRAM THE EXPENDITURE PER ELIGIBLE PUPIL OF THE DISTRICT AT THE

5TH PERCENTILE : MINNER	\$	908
25TH PERCENTILE : EDMONT	\$	1006
50TH PERCENTILE : OLPHAM	\$	1076
75TH PERCENTILE : CONDE	\$	1171
95TH PERCENTILE : WEST RIVER	\$	1381

IMPACT OF THE SIMULATED SCHOOL FINANCE PROGRAM ON SCHOOL DISTRICTS
 WITH LOW AND HIGH PROPERTY WEALTH FOR THE 1975-76 SCHOOL YEAR

FOUNDATION PROGRAM WITH STE ADD-ON

154 K-12 SCHOOL DISTRICTS LOW IN PROPERTY WEALTH

11-2

	EXPENDITURE PER ELIGIBLE PUPIL		NON-AG TAX RATE (MILLS)		STATE AID PER ELIGIBLE PUPIL	
	SIMULATED	INCREASE	SIMULATED	CHANGE	SIMULATED	ACTUAL
ANDER CENTRAL	1194	38	44.80	0.	363	325
ETHAN	1009	39	43.36	0.	117	279
WAGNER	1063	35	36.08	0.	101	267
MAURAY	1236	32	39.90	0.	356	324
NEW UNDEFOOD	293	22	36.63	0.	215	186
HARRISBURG	990	38	47.37	0.	345	302
LENNON	960	36	39.43	0.	295	259
GARY	1007	20	38.98	0.	411	391
MOST CENTRAL	890	32	34.93	0.	294	262
PAULIC	925	37	37.34	0.	245	209
AVERAGE	1016	34	39.88	0.	314	281

TEN K-12 SCHOOL DISTRICTS HIGH IN PROPERTY WEALTH

	EXPENDITURE PER ELIGIBLE PUPIL		NON-AG TAX RATE (MILLS)		STATE AID PER ELIGIBLE PUPIL	
	SIMULATED	INCREASE	SIMULATED	CHANGE	SIMULATED	ACTUAL
GLENHAM	1387	0	40.90	0.	259	259
HARFOLD	1346	0	26.40	0.	157	157
MILBURN	1085	0	31.95	0.	159	159
HARDON	1071	0	30.38	0.	110	110
DELPHIC	1203	119	27.00	5.10	170	170
BISON	1594	0	29.36	0.	185	185
HARDING	1295	6	34.41	0.	247	240
HOVEN	1247	15	24.00	0.	165	150
DEPPER	1353	0	20.20	0.	189	189
AGAR	1378	0	19.89	0.	164	164
AVERAGE	1296	14	27.45	.51	181	178
STATE AVERAGE	1062	27	37.11	.17	227	208

IMPACT OF THE SIMULATED SCHOOL FINANCE PROGRAM BY
QUINTILES OF WEIGHTED ADJUSTED ASSESSED VALUATION
PER PUPIL FOR THE 1975-76 SCHOOL YEAR

FOUNDATION PROGRAM WITH 6TB ADD-ON

QUINTILE	EXPENDITURE PER ELIGIBLE PUPIL		NON-AG TAX RATE (MILLS)		STATE AID PER ELIGIBLE PUPIL	
	SIMULATED	INCREASE	SIMULATED	CHANGE	SIMULATED	ACTUAL
FIRST	1083	33	39.72	.13	302	270
SECOND	1058	28	39.98	0.	256	228
THIRD	1072	22	38.27	.04	213	192
FOURTH	1106	11	36.41	0.	192	180

STATE AVERAGE	1062	27	37.11	.17
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IMPACT OF THE SIMULATED SCHOOL FINANCE PROGRAM BY
SIZE OF SCHOOL DISTRICT FOR THE 1975-76 SCHOOL YEAR

FOUNDATION PROGRAM WITH GTB ADD-ON

	EXPENDITURE PER ELIGIBLE PUPIL		NON-AG TAX RATE (MILLS)		STATE AID PER ELIGIBLE PUPIL	
	SIMULATED	INCREASE	SIMULATED	CHANGE	SIMULATED	ACTUAL
DISTRICT ADM						
0 - 299	1159	21	37.47	.24	242	226
300 - 499	1087	19	36.00	.03	217	198
500 - 999	1102	25	35.60	.37	207	189
OVER 1000	1056	30	40.73	0.	248	218
STATE AVERAGE	1062	27	37.11	.17	227	19
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COUNTY DISTRICT	EXPENDITURE PER ELIGIBLE PUPIL		NON-AG TAX RATE (MILLS)		SIMULATED STATE AID	
	SIMULATED	INCREASE	SIMULATED	CHANGE	TOTAL	INCREASE
AUDORA	1069	8	34.58	0.	55427	2881
PLANKINTON	984	32	39.77	0.	100744	12670
STICKNEY	1050	25	37.55	0.	58806	8174
WHITE LAKE						
BEADLE	957	37	42.38	0.	831183	133325
HURON	1208	6	36.86	0.	38369	1324
MESSINGTON	1143	13	38.46	0.	67699	4927
MOUSEY	1316	0	34.17	0.	41284	0
HITCHCOCK	1090	14	37.50	0.	78939	6265
IRPODOLIS						
BENNET						
BENNETT	847	17	30.92	0.	153240	14593
BOH HOMME						
AVON	948	35	42.27	0.	126708	17048
SCOTLAND	1167	22	45.03	0.	141073	14408
BOH HOMME	999	37	44.82	0.	278695	40095